



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q67030

Hiddenori MUKAIDA

Appln. No.: 09/985,856

Group Art Unit: 2837

Confirmation No.: 4383

Examiner: Shih Y. Hsieh

Filed: November 6, 2001

For: ENGINE MUFFLER

RESPONSE UNDER 37 C.F.R. § 1.111

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated April 1, 2003, please consider the following remarks. Claims 5-8 and 12-14 are all the claims pending in the application.

The Examiner rejects claims 5, 7, and 8 under 35 U.S.C. § 103(a) as being obvious over WO 99/17007 to Karlsson ("Karlsson") in view of U.S. 5,738,184 to Masuda et al. ("Masuda"); claim 6 under 35 U.S.C. § 103(a) as being obvious over Karlsson in view of Masuda, and further in view of U.S. 4,890,690 to Fischer et al. ("Fischer"); and claims 12-14 under 35 U.S.C. § 103(a) as being obvious over Karlsson in view of U.S. 6,250,075 to Funakoshi et al. ("Funakoshi") and Fischer. Applicant respectfully traverses all of these rejections in view of the following remarks.

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Shih Y.
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Karlsson

Karlsson discloses a muffler divided into two chambers, namely, a rear housing part 9 and a front housing part 25, by means of a partition wall 10. The partition wall 10 is clamped between the housing parts 9, 25. A catalytic element 2 is clamped between the partition wall 10 and a cover plate 18. An outside 20 of the cover plate 18 is provided with a plurality of apertures 19 to blow out an exhaust gas after it passes the catalytic element 2. The catalytic element is composed of a thread-formed material and it is not related to an outside wall of the muffler. Karlsson does not disclose the double walls 12a, 12b, 14a and 14b of the present invention. Karlsson dose not disclose the heat insulating material 16 of the present invention.

Masuda

Masuda discloses an outer wall panel 36, an inner wall panel 41, an air gap Sa, an outer wall panel 37, an inner wall panel 42 and an air gap Sb. There is no disclosure that the wall panel is made of net-like construction. The panels have a plate construction. An exhaust gas is led into a first expansion chamber after passing through a Venturi tube 25. An external air is introduced (via suction) from the openings 38 into the first expansion chamber 31 via the air gap Sa and the Venturi tube 25 and the gas in the first expansion chamber 31 is cooled. Also the air introduced into the second expansion chamber 32 is reduced with an increasing of the air temperature. The exhaust gas is discharged out from a pipe 60 after passing through the first expansion chamber 31, the oxidation catalyst member 50, and the second expansion chamber 32. Reference numeral 57 indicates a pair of bolt introducing sleeves 57. Masuda does not disclose a heat insulating material.

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Fischer

Fischer discloses an inner wall 30 and an outer wall 31 in the opposite side of a muffler against an engine side. A high-temperature resistant insulating material 32 is placed between the inner wall 30 and the outer wall 31. The inner wall 30 and the outer wall 31 are of an aluminum silicate fiber-mesh construction, as is clearly understood from Fig. 3. After passing through a construction of the inner wall 30, the insulating material 32, and the outer wall 31, the exhaust gas is reduced from 1,000°C to 500°C before being discharged out from the passages 9 and 10. It is also recommended to add a protective member 33 to protect a user from an extraordinary high temperature.

The double wall construction of the present invention offers a complete one piece plate construction and not a mesh construction. The exhaust gas never goes through the inner wall, the insulating material, and the outer wall. The insulating material of the present invention is not placed in the exhaust gas stream.

Funakoshi

Funakoshi is not pertinent to the double wall construction, cover plates surrounding a catalytic converter, or an insulating material placed between the walls.

Analysis

A. ***Claim 5:***

To reject claim 5, the Examiner relies upon a combination of Karlsson and Masuda. In so doing, the Examiner recognizes that Karlsson does not teach or suggest that a wall of the muffler

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has a double wall construction, and therefore looks to Masuda to teach this feature. Applicant respectfully disagrees.

The heavy reliance upon the Karlsson reference is misplaced. Specifically, the main part of Karlsson's partition wall 10 consists of one plate and one cover plate. These two plates hold a catalytic element. The cover plate 18 has a plurality of holes 19 through the gas passes. The present invention requires no such holes. Instead, the present invention discloses a pair of cover plates 17, 17' which surround the catalytic element. There are no cover plates 17, 17' that surround the catalytic element in Karlsson.

The rejection grounds assert that Masuda discloses a double wall construction. However, the air gap *S_a* is used for introducing an outlet air and the air circulates in the air gap until it is exhausted. The reference does not disclose an insulating material. The second expansion chamber has a simple air gap. There is no disclosure regarding insulating material.

For these reasons, even if combined, the prior art would still not meet all of the limitations of the claimed invention.

B. *Claim 6:*

With respect to claim 6, the Examiner recognizes that Karlsson and Masuda do not teach or suggest a heat insulating material provided in a gap between a double wall construction. Therefore, the Examiner looks to Fischer to allegedly teach this feature. Applicant respectfully traverses as follows.

The inner wall 30 and the outer wall 31 of Fischer are made of net-like construction as shown in FIG.3. Therefore the exhaust gas goes through the double walls and insulating

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materials to reduce the temperature of exhaust gas. Practically, the temperature is reduced from 1,000°C to 500°C (Column 4, Line 13). In sharp contrast, in the present invention the exhaust gas never penetrates the double walls including the insulating material between them. This is a characterized point of the present invention. It would have been illogical to think about the double wall construction having the insulating materials between them in view of Fischer's disclosure.

C. *Claim 7:*

With respect to claim 7, the rejection grounds assert that when there is no particular restriction in the gas purification concentration degree, it is obvious that there is no need to apply a catalyst to the purifier. Applicant disagrees because the prior art does not teach or suggest the apparatus defined by pending claim 7.

D. *Claim 8:*

The Examiner recognizes that Karlsson does not secure the covers (i.e., the cover plate 18 and the depression 15) together with a bolt and a nut, and therefore looks to Masuda to allegedly teach this feature. Applicant respectfully disagrees.

None of the applied references are pertinent to claim 8 for the following reasons. An exemplary embodiment of the invention defined by claim 8 is depicted in Fig. 7. Here, the apparatus includes cover plates 17, 17', air gaps provided in the upper and lower parts of the second expansion chamber, and an aperture is provided in the outer wall of the second expansion chamber. Applicant respectfully submits that it would have been illogical (and almost impossible) for a skilled artisan (e.g., a skilled engineer) in this field to create the apparatus

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disclosed in Fig. 7 of the present invention by combining the collective teachings of the cited references.

E. *Claims 12 and 13:*

The Examiner recognizes that Karlsson does not teach or suggest a second exhaust gas purifier, as recited in claim 12. Therefore, the Examiner looks to Funakoshi to allegedly teach this feature. The Examiner also recognizes that Karlsson does not teach or suggest that a wall of the muffler has a double wall construction (as recited in claim 12), and that a heat insulating material is provided between the double walls (as recited in claim 14). Therefore, the Examiner looks to Fischer to allegedly teach these features. Applicant respectfully disagrees.

The first expansion chamber and the second expansion chamber of the present invention do not have a mesh-like structure, but instead have a plate structure. The exhaust gas does not go through the structure consisting of the inner wall 12a, 14a, the insulating materials 16, and the outer wall 12b, 14b. For these reasons, Applicant respectfully asserts that it would have been illogical (and almost impossible) to arrive at the structure of the present invention in view of the combined teachings of the cited references.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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